

Appl. No. 09/831,025
Amdt dated Dec. 21, 2004
In reply to FINAL office action of Sept. 22, 2004

REMARKS

Claims 18-31, 33-36 and 38-44 are presently in the application. Claims 1-17, 32, 37 and 45-47 have been canceled.

The examiner's indication of allowable subject matter in claims 21, 24-26, 28, 31, 34-36, 38-41, 43 and 44 is greatly appreciated.

Reconsideration of the objection to the drawings is respectfully requested. The drawings have been objected to as failing to show the claimed width and depth parameters of the annular groove "in more detail." Claim 18 calls for "an annular groove (8), and wherein the width of the annular groove (8) is one-and-a-half times greater than the diameter of the injection orifice (3)." The drawings currently illustrate the groove (8) and the injection orifice (3). The drawings in an application are not required to be to scale. As far as the rules require, 37 CFR 1.84(k) states that:

The scale to which a drawing is made must be large enough to show the mechanism without crowding when the drawing is reduced in size to two-thirds in reproduction. Indications such as "actual size" or "scale 1/2" on the drawings are not permitted since these lose their meaning with reproduction in a different format.

The drawings are presently sufficient to illustrate the claimed subject matter and any attempt to illustrate the relationship of the width of the groove to the diameter of the injection opening would be lost when the drawings are reproduced in a different format.

Reconsideration of the rejection of claims 18-20, 22, 23, 27, 29, 30, 33 and 42 under 35 U.S.C. 103(a) as unpatentable over Stevens (US 5,890,666) is respectfully requested.

The examiner states that "Stevens clearly shows the width of the annular groove is at least one-and-a half times greater than the diameter of the injection opening orifice." This is clearly not the case. The examiner is reminded that patent drawings do not define the precise proportions of the elements and may not be relied on to show particular sizes if the specification is completely silent on the issue. In this regard, MPEP 2125 states that:

When the reference does not disclose that the drawings are to scale and is silent as to dimensions, arguments based on measurement of the drawing features are of little value. See *Hockerson-Halberstadt, Inc. v. Avia Group Int'l*, 222 F.3d 951, 956, 55 USPQ2d 1487, 1491 (Fed. Cir. 2000) (The disclosure gave no indication that the drawings were drawn to scale. "[I]t is well established that patent drawings do not define the precise proportions of the elements and may not be relied on to show particular sizes if the specification is completely silent on the issue.").

The examiner apparently recognizes that there is no teaching in Stevens of an injection nozzle wherein the end of the nozzle needle oriented towards the nozzle needle seat has an annular groove, and wherein the width of the annular groove is one-and-a-half times greater than the diameter of the injection orifice because the rejection is based on 35 U.S.C. 103, not under 35 U.S.C. 102.

The examiner goes on to state the opinion that the width of the annular groove is an obvious matter of optimum design choice.

Applicant's specification teaches that in the partial stroke range of the nozzle needle, the annular groove in the end of the nozzle needle oriented toward the nozzle needle seat is decisive for the throttle action of the injection nozzle. Since the annular grooves can be reproduced with high precision, there is very little variation in the throttling action of injection nozzles of the same

design. For this reason, by measuring the operating behavior of an injection nozzle according to applicant's invention, the operating behavior of all other injection nozzles of the same design can be predicted with significantly greater precision and the control of the injection process can be correspondingly optimized. It is also taught that by providing an annular groove in the end of the nozzle needle oriented toward the nozzle needle seat with a width which is one-and-a-half times greater than the diameter of the injection orifice, the throttle action of the injection nozzle is influenced by the annular groove over a sufficiently large partial stroke range. Spec., page 6. This advantageous feature is clearly not taught or suggested by Stevens.

Stevens does not deal with the problem of the variation in injection quantity. This means that although grooves in the nozzle needle were known, it was the present applicant who discovered that using grooves for the reduction of the variation in injector quantity would be advantageous and it was the present applicant who discovered that providing a groove width one-and-a-half times greater than the diameter of the injection orifice was particularly advantageous.

A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) (The claimed wastewater treatment device had a tank volume to contractor area of 0.12 gal./sq. ft. The prior art did not recognize that treatment capacity is a function of the tank volume to contractor ratio, and therefore the parameter optimized was not recognized in the art to be a result-effective variable.). See also In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) (prior art suggested proportional

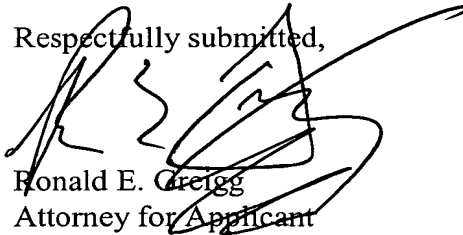
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balancing to achieve desired results in the formation of an alloy). The MPEP specifically instructs examiners that a particular parameter must first be recognized as a result-effective variable. See MPEP 2144.05.

In the present case, Stevens does not recognize that the width of the groove in the end of the nozzle needle in relation to the diameter of the injection orifice is a result-effective variable. Thus, it is improper for the examiner to conclude that the particular relationship specified in claim 18 between the width of the groove and the diameter of the injection orifice is simply the discovery of optimum range. The examiner is clearly using the applicant's own teaching in making a rejection under 35 U.S.C. 103 which is not permissible.

Entry of the amendment and allowance of the claims is respectfully requested.

Respectfully submitted,



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